

IN THE CLAIMS:

Please amend the claims and add new claims 47-67 as shown below:

Claims 1-25 (canceled)

Claim 26 (currently amended): An apparatus comprising:

a sealable vessel for processing materials especially for carrying out pre-hydrolysis of a biomass or for carrying out digestion of a mineral, said sealable vessel including:

an external shell, and

an internal shell, the internal shell being mounted on the external shell; there being a space between the internal shell and the external shell, and a vacuum being produced in the space produced between the internal shell and the external shell,

~~wherein the apparatus comprises a sealable vessel for processing materials especially for carrying out pre-hydrolysis of a biomass or for carrying out digestion of a mineral, in that~~ the internal shell is a coating; and ~~in that~~

implosion of the coating is prevented through the vacuum maintained between the coating and the external shell so as to allow the ~~internal~~ coating and the external shell to be properly juxtaposed.

Claim 27 (currently amended): The apparatus according to claim 26, wherein the external shell and the internal ~~coating~~ shell are made of a structural material and corrosion resistant material, respectively.

Claim 28 (currently amended): The apparatus according to claim 26, wherein the external shell and internal ~~coating~~ shell are made of microbonded carbon steel and refractory metal, the latter including its alloys, respectively.

Claim 29 (previously presented): The apparatus according to claim 26, wherein the apparatus is used as a thermo-chemical reactor in pre-hydrolysing biomass.

Claim 30 (previously presented): The apparatus according to claim 26, wherein the apparatus is used as a reactor in a process of mineral digestion.

Claim 31 (previously presented): The apparatus according to claims 26, wherein the apparatus is used as a batch reactor.

Claim 32 (currently amended): The apparatus according to claim 26, wherein the external shell and the internal ~~coating~~ shell are mounted by simple juxtaposition, free from welding in the different materials.

Claim 33 (currently amended): The apparatus according to claim 26, wherein the external shell and the internal ~~coating~~ shell are welded together and protection rings or plates of the same metal as the coating are placed on the welding of the parts and edges.

Claim 34 (currently amended): The apparatus according to claim 26, further comprising at least one device for detecting and monitoring the vacuum between the external shell and the internal ~~coating~~ shell.

Claim 35 (currently amended): The apparatus according to claim 34, wherein the at least one detection and monitoring device detects vacuum microleakage, so as to enable one to detect microcracks in the internal ~~coating~~ shell.

Claim 36 (previously presented): The apparatus according to claim 34, wherein the at least one detection and monitoring device detects microcracks in a continuous way.

Claim 37 (previously presented): The apparatus according to claim 34, wherein the at least one detection and monitoring device detects microcracks in a scheduled intermittent manner.

Claim 38 (currently amended): The apparatus according to claim 34, wherein helium gas is introduced into the ~~reactor~~ apparatus for detecting microcracks in the internal coating.

Claim 39 (previously presented): The apparatus according to claim 34, wherein microleakage detectors are coupled to the vacuum line.

Claim 40 (currently amended): The apparatus according to claim 26, further comprising a mechanism for ~~oscillating~~ generating a rotational movement in said vessel.

Claim 41 (currently amended): The apparatus according to claim 40, wherein the mechanism for generating a ~~oscillating~~ rotational movement ~~enables the~~ in said vessel apparatus comprises a chain and a hydraulic motor commanded by microswitches to ~~oscillate around its main axis~~.

Claim 42 (previously presented): The apparatus according 26, further comprising a helical feeder for feeding and compacting a product to be processed in the apparatus.

Claim 43 (previously presented): The apparatus according to claim 42, wherein the helical feeder can be uncoupled after the apparatus has been filled.

Claim 44 (currently amended): The apparatus according to claim 26, ~~further comprising~~
wherein said vessel includes a large openable cover for discharging processed solid
material.

Claim 45 (previously presented): The apparatus according to claim 26, further comprising
a tilting mechanism for ~~permitting~~ tilting the vessel to permit the discharge of processed
solid material.

Claim 46 (currently amended): The apparatus according to claim 26, further comprising a
transporting cart for transporting said vessel ~~in order to permit apparatus transport to where~~
~~it can be used.~~

Claim 47 (new): An apparatus for processing materials especially for carrying out pre-
hydrolysis of a biomass or for carrying out digestion of a mineral, comprising:
an external shell; and
an internal coating in juxtaposed contact with said external shell,
wherein the external shell and the internal coating are kept in contact via a vacuum
created between the external shell and the internal coating.

Claim 48 (new): The apparatus according to claim 47 wherein said internal coating is more
resistant than said external shell to biomass hydrolysis process chemical corrosion.

Claim 49 (new) The apparatus according to claim 47 wherein said external shell is a
carbon steel.

Claim 50 (new) The apparatus according to claim 47 wherein said external shell is thicker than said internal coating.

Claim 51 (new): The apparatus according to claim 47 wherein said internal coating is more resistant than said external shell to biomass pre-hydrolysis process or mineral digestion process chemical corrosion.

Claim 52 (new): The apparatus according to claim 47 wherein the internal coating has a higher melt temperature than said external shell.

Claim 53 (new): The apparatus according to claim 52 further comprising welds between said internal coating and said external shell formed in regions wherein interior reaction chamber access openings are formed in said external shell, and said apparatus further comprising sacrifice rings in weld regions to protect the internal coating from contamination by material from the lower melt temperature external shell.

Claim 54 (new): The apparatus according to claim 47 further comprising a vacuum level monitor that monitors a change in vacuum level in a vacuum space between said external shell and coating which is indicative of a leak in said reactor.

Claim 55 (new): The apparatus according to claim 47 wherein said external shell is formed of a carbon steel and said internal coating is formed of a corrosion resistant refractory metal selected from the group of Ti, Zr, Nb, Ta, and alloys thereof.

Claim 56 (new): A chemical reactor, comprising:

an external shell of a first material having an interior surface which extends, without a direct contact, about an interior corrosive chemical environment reaction region within said reactor;

an internal shell formed of a second material different than said first material and having an inner surface and an outer surface that extend along with the interior surface of said external shell so as to also extend, in a direct contact, about the interior corrosive chemical environment reaction region of said reactor, and said outer surface of said internal shell and said interior surface of said external shell are arranged so as to define a vacuum space therebetween and are arranged in a manner which, when a vacuum is generated in said vacuum space, said outer surface of said internal shell and said interior surface of said external shell are placed in direct contact whereby said internal shell is precluded from expansion during a reaction process due to contact confinement by said external shell and the vacuum generated precludes the internal shell from imploding upon a drop in pressure in the reaction chamber.

Claim 57 (new): The reactor according to claim 56 wherein said second material is more resistant than the first material to biomass hydrolysis process chemical corrosion.

Claim 58 (new) The reactor according to claim 56 wherein said first material is a carbon steel.

Claim 59 (new) The reactor according to claim 56 wherein said external shell is thicker than said internal shell.

Claim 60 (new): The reactor according to claim 56 wherein said second material is more resistant than the first material to mineral digestion process chemical corrosion.

Claim 61 (new): The reactor according to claim 56 wherein the second material of said internal shell has a higher melt temperature than the first material of said external shell.

Claim 62 (new): The reactor according to claim 61 further comprising welds between said internal and external shells formed in regions wherein interior reaction chamber access openings are formed in said reactor, and said reactor further comprising sacrifice rings in weld regions to protect the internal shell from contamination by material from the lower melt temperature external shell material.

Claim 63 (new): The reactor according to claim 56 further comprising a vacuum level monitor that monitors a change in vacuum level in said vacuum space which is indicative of a leak in said reactor.

Claim 64 (new): The reactor according to claim 56 wherein said external shell is formed of a carbon steel and said internal shell is formed of a corrosion resistant refractory metal selected from the group of Ti, Zr, Nb, Ta, and alloys thereof.

Claim 65 (new): A mobile reactor assembly comprising the reactor of claim 56 and a cart supporting said reactor for facilitating transportation of said reactor to a desired location.

Claim 66 (new): The assembly of claim 65 further comprising means for feeding material to said reactor and means for tilting said reactor that are supported by said cart.

Claim 67 (new): The assembly of claim 65 further comprising means for rotating and means for oscillating said cart.